



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-0013; Project Identifier MCAI-2021-01371-E; Amendment 39-21920; AD 2022-03-03]

RIN 2120-AA64

Airworthiness Directives; Austro Engine GmbH Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2021-22-20 which applied to certain Austro Engine GmbH E4 and E4P model diesel piston engines. AD 2021-22-20 required, for engines with an affected cylinder head, inspection of the high pressure pump (HPP) driving gear and, depending on the results of the inspection, replacement of the HPP driving gear with a part eligible for installation. AD 2021-22-20 also required, for engines with an affected HPP driving gear, replacement of the HPP driving gear before further flight or within a certain number of flight hours, depending on the engine configuration and number of affected engines installed. This AD requires, for engines equipped with a certain cylinder head and HPP driving gear combination, removal, inspection, and replacement of the HPP driving gear before further flight and, depending on the inspection findings, replacement of the HPP shaft, cylinder head, camshaft gear, or inlet/outlet camshaft bushing. This AD also requires, for engines with an affected HPP driving gear, replacement of the HPP driving gear before further flight or within a certain number of flight hours, depending on the engine configuration and number of affected engines installed. This AD was prompted by reports of failure of the HPP driving gear and a subsequent determination that a batch of HPP driving gears may have been damaged during assembly. This AD was also prompted by an investigation which found that certain cylinder heads installed in combination with certain HPP driving gear on the same engine may cause damage to the HPP driving gear. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive any comments on this AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this final rule, contact Austro Engine GmbH, Rudolf-Diesel-Strasse 11, 2700 Weiner Neustadt, Austria; phone: +43 2622 23000; website: <https://www.austroengine.at>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0013.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0013; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any

comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: wego.wang@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued AD 2021-22-20, Amendment 39-21793 (86 FR 60159, November 1, 2021), (AD 2021-22-20), for Austro Engine GmbH E4 and E4P model diesel piston engines with a certain cylinder head or HPP driving gear installed.

AD 2021-22-20 required, for engines with an affected cylinder head, inspection of the HPP driving gear and, depending on the results of the inspection, replacement of the HPP driving gear with a part eligible for installation. AD 2021-22-20 also required, for engines with an affected HPP driving gear, replacement of the HPP driving gear either before further flight or within a certain number of flight hours, depending on the engine configuration and number of affected engines installed. AD 2021-22-20 resulted from reports of failure of the HPP driving gear and a subsequent investigation by the manufacturer, which determined that a certain batch of HPP driving gears may have been damaged during assembly. The investigation also determined that affected engines equipped with an affected cylinder head were also subject to premature failure of the HPP driving gear. The FAA issued AD 2021-22-20 to prevent the failure of the HPP driving gear.

Actions Since AD 2021-22-20 was Issued

Since the FAA issued AD 2021-22-20, the European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2021-0274-E, dated December 9, 2021, to address an unsafe condition for the specified products. The MCAI states:

Occurrences were reported of HPP driving gear failure. Subsequent investigation determined that a certain batch of HPP driving gears was produced with a worn out assembly tool P/N AE300T012-1. Those HPP

driving gears may have been damaged during assembly. Concurrently, it was determined that, for engines equipped with a certain cylinder head, a stack up of tolerances exists between the cylinder head, cylinder head backside cover, camshaft gear and HPP driving gear. Both scenarios could result in premature HPP driving gear failure.

This condition, if not detected and corrected, could lead to engine in-flight shut-down with consequent forced landing, possibly resulting in damage to the aeroplane and injury to occupants.

To address this potential unsafe condition, Austro Engine published MSB-E4-035 to provide instructions for HPP driving gear inspection on engines equipped with a cylinder head P/N E4A-12-500-000, and MSB-E4-034/1 to provide instructions for replacement of affected HPP gears, as defined in this [EASA] AD. Consequently, EASA issued Emergency AD 2021-0203-E (later revised) to require inspection and/or replacement of HPP gears.

Since that [EASA] AD was issued, it has been determined that an affected cylinder head/HPP driving gear combination, as defined in this [EASA] AD, may cause damage to the HPP driving gears. Austro Engine issued the SB, as defined in this [EASA] AD, incorporating the requirements of MSB-E4-034/1 and MSB-E4-035, to provide instructions for HPP driving gear inspection and replacement. The SB also prohibits (re-)installation of a HPP driving gear E4A-30-000-601 or P/N E4A-30-000-201 rev. AB.1 on engines having a cylinder head P/N E4A-12-500-000 installed. The SB further removes from the list of affected HPP driving gears certain engines and HPPs, which were reworked by Austro Engine pending approval of MSB-E4-034.

For the reason described above, this [EASA] AD partially retains the requirements of EASA AD 2021-0203R1, which is superseded, and requires replacement of the HPP driving gear on engines with an affected

cylinder head/HPP driving gear combination installed. This [EASA] AD also provides requirements for HPP driving gear installation.

You may obtain further information by examining the MCAI in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0013.

The FAA is issuing this AD to address the unsafe condition on these products.

FAA's Determination

This product has been approved by EASA and is approved for operation in the United States. Pursuant to our bilateral agreement with the European Community, EASA has notified the FAA of the unsafe condition described in the MCAI. The FAA is issuing this AD because the agency evaluated all the relevant information provided by EASA and has determined that the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed Austro Engine Mandatory Service Bulletin No. MSB-E4-036/1, Revision No. 1, dated December 14, 2021 (MSB-E4-036/1). This service information specifies procedures for inspecting and replacing HPP driving gears installed on E4 and E4P model diesel piston engines equipped with an affected cylinder head. Austro Engine MSB-E4-036/1 also identifies the applicable part number and serial numbers of affected HPP driving gears and affected cylinder head/HPP driving gear combinations installed on Austro Engine GmbH E4 and E4P model diesel piston engines. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

AD Requirements

This AD requires, for engines equipped with an affected cylinder head and HPP driving gear combination, removal, inspection, and replacement of the HPP driving gear before further flight and, depending on the inspection findings, replacement of the HPP shaft, cylinder head, camshaft gear, or inlet/outlet camshaft bushing. This AD also requires, for engines with an affected HPP driving gear, replacement of the HPP driving

gear before further flight or within a certain number of flight hours, depending on the engine configuration and number of affected engines installed.

Differences Between this AD and the MCAI

The MCAI requires inspection and replacement of the HPP driving gear using Austro Engine MSB-E4-036, Initial Issue, dated November 30, 2021, while this AD requires using Austro Engine MSB-E4-036/1 to inspect and replace the HPP driving gear.

Justification for Immediate Adoption and Determination of the Effective Date

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies foregoing notice and comment prior to adoption of this rule. The FAA received a report of occurrences of failure of the HPP driving gear. The manufacturer subsequently determined that a certain batch of HPP driving gears was produced with a worn out assembly tool, and may have been damaged during assembly. The manufacturer determined that, for engines equipped with a certain cylinder head, a stack up of tolerances exists between the cylinder head, cylinder head cover, camshaft gear and HPP driving gear. Since the FAA issued AD 2021-22-20 the manufacturer determined that the combination of a certain affected cylinder head installed with a certain affected HPP driving gear on the same engine may cause damage to the HPP driving gear. These conditions could result in failure of the HPP driving gear. Austro Engine subsequently published Austro Engine MSB-E4-036/1, Revision No. 1, dated December 14, 2021, providing instructions for inspection and replacement of certain HPP driving gears installed on Austro Engine E4 and E4P model diesel piston engines. In response, EASA issued EASA Emergency AD 2021-0274-E, dated December

9, 2021, to require inspection and replacement of the HPP driving gear on engines with an affected cylinder head and HPP driving gear combination before next flight.

Failure of the HPP driving gear can result in in-flight engine shut-down, forced landing, and damage to the airplane. The FAA considers failure of the HPP driving gear to be an urgent safety issue that requires immediate action to avoid damage to the airplane. For engines with an affected cylinder head, if the HPP driving gear does not pass the inspection required by this AD, this AD requires inspection and possible replacement of the HPP shaft, cylinder head, camshaft gear, and inlet/outlet camshaft bushing before further flight. In addition, for engines with an affected HPP driving gear with a certain number of flight hours accumulated on the HPP driving gear, this AD requires replacement of the HPP driving gear before further flight.

Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B). In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forgo notice and comment.

Comments Invited

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2022-0013 and Project Identifier MCAI-2021-01371-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Regulatory Flexibility Act

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

Costs of Compliance

The FAA estimates that this AD affects 418 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Inspect HPP driving gear	.5 work-hours x \$85 per hour = \$42.50	\$0	\$42.50	\$17,765
Replace HPP driving gear	2 work-hours x \$85 per hour = \$170	\$145	\$315	\$131,670

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need this replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Inspect and replace HPP shaft	5 work-hours x \$85 per hour = \$425	\$2,385.80	\$2,810.80
Inspect and replace cylinder head	16 work-hours x \$85 per hour = \$1,360	\$18,530.50	\$19,890.50
Inspect and replace camshaft gear	10 work-hours x \$85 per hour = \$850	\$2,371.20	\$3,221.20
Inspect and replace inlet/outlet camshaft bushing	10 work-hours x \$85 per hour = \$850	\$2,371.20	\$3,221.20

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866, and
- (2) Will not affect intrastate aviation in Alaska.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

- a. Removing Airworthiness Directive 2021-22-20, Amendment 39-21793 (86 FR 60159, November 1, 2021); and

- b. Adding the following new airworthiness directive:

2022-03-03 Austro Engine GmbH: Amendment 39-21920; Docket No. FAA-2022-0013; Project Identifier MCAI-2021-01371-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2021-22-20, Amendment 39-21793 (86 FR 60159, November 1, 2021).

(c) Applicability

This AD applies to Austro Engine GmbH E4 and E4P model diesel piston engines equipped with either:

(1) A cylinder head having part number (P/N) E4A-12-500-000, installed in combination with high-pressure pump (HPP) driving gear P/N E4A-30-000-601 (any revision), P/N E4A-30-000-201 rev. AB.1, or P/N E4A-30-000-201 with a serial number (S/N) listed in Chapter 1.4, Table 1 of Austro Engine Mandatory Service Bulletin No. MSB-E4-036/1, Revision No. 1, dated December 14, 2021 (MSB-E4-036/1); or

(2) An HPP driving gear, having P/N E4A-30-000-201, with an S/N listed in Chapter 1.4, Table 1 of Austro Engine MSB-E4-036/1.

(d) Subject

Joint Aircraft System Component (JASC) Code 8520, Reciprocating Engine Power Section.

(e) Unsafe Condition

This AD was prompted by reports of failure of the HPP driving gear and a subsequent investigation by the manufacturer, which determined that a certain batch of HPP driving gears may have been damaged during assembly. The investigation also determined that the combination of a certain affected cylinder head installed on an engine with a certain affected HPP driving gear installed on the same engine may cause damage to the HPP driving gear. The FAA is issuing this AD to prevent the failure of the HPP driving gear. The unsafe condition, if not addressed, could result in in-flight engine shut-down, forced landing, and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For engines equipped with a cylinder head and HPP driving gear combination identified in paragraph (c)(1) of this AD, before further flight after the effective date of this AD, remove the HPP driving gear and replace it with an HPP driving gear eligible for installation using paragraphs 2.1.1 through 2.1.4., Removal and inspection of the HPP driving gear, of Austro Engine MSB-E4-036/1.

(2) Before further flight after performing the required actions in paragraph (g)(1) of this AD, visually inspect the removed HPP driving gear using the criteria in paragraph 7. Appendix II, Table 6, of Austro Engine MSB-E4-036/1.

(3) If, based on the visual inspection required by paragraph (g)(2) of this AD, the HPP driving gear does not meet the acceptable condition criteria in paragraph 7. Appendix II, Table 6, of Austro Engine MSB-E4-036/1, before further flight, visually inspect the HPP shaft, cylinder head, camshaft gear, and inlet/outlet camshaft bushing using the criteria in paragraph 7. Appendix II, Table 7, of Austro Engine MSB-E4-036/1.

(4) If, based on the visual inspection required by paragraph (g)(3) of this AD, the HPP shaft, cylinder head, camshaft gear, or inlet/outlet camshaft bushing do not meet the acceptable condition criteria in paragraph 7. Appendix II, Table 7, of Austro Engine MSB-E4-036/1, before further flight, remove any part not meeting the acceptable condition criteria and replace with a part eligible for installation.

(5) For engines equipped with an affected HPP driving gear identified in paragraph (c)(2) of this AD, within the compliance time specified in Table 1 to paragraph (g)(5) of this AD, as applicable, replace the HPP driving gear with an HPP driving gear eligible for installation.

Table 1 to Paragraph (g)(5) – HPP Driving Gear Replacement

Engine Group	Flight Hours (FHs) accumulated since first installation on the HPP	Compliance Time
1	40 FHs or more	Before next flight after the effective date of this AD
	Less than 40 FHs	Before exceeding 40 FHs since first installation on the HPP
2	80 FHs or more	Before next flight after the effective date of this AD
	Less than 80 FHs	Before exceeding 80 FHs since first installation on the HPP

(h) Definitions

(1) For the purpose of this AD, an HPP driving gear eligible for installation is:

(i) An HPP driving gear that is not identified in paragraph (c)(2) of this AD; or

(ii) An HPP driving gear that does not create a cylinder head and HPP driving gear combination identified in paragraph (c)(1) of this AD.

(2) For the purpose of this AD, an HPP shaft, cylinder head, camshaft gear, and inlet/outlet camshaft bushing eligible for installation is:

(i) An HPP shaft, cylinder head, camshaft gear, and inlet/outlet camshaft bushing that meets the acceptable condition criteria in paragraph 7. Appendix II, Table 7, of Austro Engine MSB-E4-036/1; or

(ii) An HPP shaft, cylinder head, camshaft gear, and inlet/outlet camshaft bushing that is a new (zero hour) part.

(3) For the purpose of this AD, Engine Group 1 is Austro Engine E4 model engines in configuration “-A” installed on single engine airplanes.

(4) For the purpose of this AD, Engine Group 2 is Austro Engine E4 model engines in configuration “-B” or “-C” and Austro Engine E4P model engines installed on twin-engine airplanes.

(i) No Reporting Requirement

The reporting instructions specified in paragraph 7. Appendix II, Tables 6 and 7, of Austro Engine MSB-E4-036/1 are not required by this AD.

(j) Special Flight Permit

A special flight permit may be issued in accordance with 14 CFR 21.197 and 21.199 to permit a single ferry flight to a location where the actions required by this AD can be accomplished on a twin-engine airplane that has one or two Austro Engine E4 model engines in configuration “-B” or “-C”, or Austro Engine E4P model engines, installed.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (l)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(l) Related Information

(1) For more information about this AD, contact Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: wego.wang@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2021-0274-E, dated December 9, 2021, for more information. You may examine the EASA AD in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0013.

(m) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Austro Engine Mandatory Service Bulletin No. MSB-E4-036/1, Revision No. 1, dated December 14, 2021.

(ii) [Reserved]

(3) For Austro Engine service information identified in this AD, contact Austro Engine GmbH, Rudolf-Diesel-Strasse 11, 2700 Weiner Neustadt, Austria; phone: +43 2622 23000; website: <https://www.austroengine.at>.

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on January 19, 2022.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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